

COLSF 7.3 V1

**ecology and environment, inc.**

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International Specialists in the Environment

March 31, 1992

Mr. Neil Thompson
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101

Re: Colbert Landfill

Dear Neil:

Ecology and Environment, Inc. (E & E) has completed its review of the Preliminary Groundwater Monitoring Plan, Preliminary Treatment and Discharge Plan, and Preliminary Extraction Well Plan prepared by Landau Associates. The intent of our review was to ensure that the proposed plans are not only technically feasible and appropriate, but are also in compliance with the Record of Decision. Our comments on the three preliminary plans are listed below.

Preliminary Groundwater Monitoring Plan

<u>Page</u>	<u>Section</u>	<u>Comment</u>
1-5	1.2.2	Fluvial Unit is stated as being treated as an independent hydrogeologic unit for the project, but then is combined into Upper Aquifer in constituent distribution (page 1-7).
2-1	2.1.1	Although monitoring in the east extraction system is not required, a considerable amount of information may be obtained from periodic monitoring.
3-2	3.1	As previously recommended in Phase I monitoring well installation comments, the casing used for sealing the aquitard after step-down should be left in place to provide additional protection between aquifer units.

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Preliminary Treatment and Discharge Plan

<u>Page</u>	<u>Section</u>	<u>Comment</u>
2-5	2.2.2.1	Line 8. Typographical error: "8 gallons/day"
2-6	2.2.2.3	When diluting acid, it is a safer practice to add acid to water.
2-7	2.2.2.3	Specify allowable pH range for discharging spent batch cleaning solution into effluent piping system.
	2.2.3	It is understood that the type of sequestering agent to be used will depend on the success of the non-phosphate agent. How will this performance be checked and under what criteria will the selection be made?
3-3	3.4	Demonstrate that minimum pressure (200 psig) rating is sufficient for water hammer. Specify the maximum allowable deflection for pipeline installation. Confirm that 4.5 feet depth is below the frostline. Hydrostatic testing should be performed on a certain maximum length of piping (normally less than 1,500 feet). Specify maximum allowable leakage and testing source.
3-4	3.4	Specify backfill lift thickness.
5-2	5.3	Normally, the NPDES compliance sampling location is at the point of discharge, not at the receiving body of water, and generally the NPDES permit will specify sampling frequency and required parameters.
B-6	10)	a_w = Specific wetted packing surface area, $a_w < 38 \text{ ft}^2/\text{ft}^3$ for 3.5" Jaeger Tripacks.

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- D-11 16) This equation is acceptable for comparing energy requirements, but not for sizing blowers. Also, other losses are generally much greater than 10% of packing loss.
- D-11 17) This equation is acceptable for comparing energy requirements, but not for sizing pumps. Also, other losses are likely to be greater than 10% of vertical lift.
- Table D-2 Correct description: $K_{a,a}$ - Actual overall liquid phase mass transfer coefficient.
- E-2 1.3.B.3 Does the required 30-year design life of the system include blowers and other equipment?
- E-7 2.1.D Define "energy efficient operation."
- E-9 2.2 Add lighting protection requirements.
- 2.2.F Pressure taps should be located at the air inlet and at 1/2 (or 1/3 and 2/3) of the packing height. Pressure at the top of the packing would be close to zero.
- E-10 2.5.A Typographical error: "shall be."
- Potentially conflicting to section 2.5.C for material selection.
- E-11 2.5.C Packing material shape and configuration have been fixed by Table 2-4 (Jaegar Tripacks).
- E-12 2.6.F Provide specific NEMA reference.
- 2.7 Add: "The duct shall have sufficient length of straight run for pitot tube installation."
- 2.8.A Provide specific NEMA reference.
- 2.8.D Paddle type flow switches generally do not allow set point adjustments. A pitot tube-pressure differential gauge/switch combination can provide both accuracy and flexibility.

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*Air temp
not water influenced?*

*What is being measured
and why?*

E-13 2.8.G Temperature sensor should be installed at 1/2 the tower height because water has a much higher heat capacity than air.

Drawings Drawings K-2 and K-3 are identical. The legend is not identified. Some symbols are not identified in the legend.

K-2 The need for acid addition (pre- and post-stripping) and batch acid cleaning should be identified in the 30% design phase (if sequestering has been chosen as the primary scale control process). If conclusive evidence cannot be achieved before the final design, the scale control equipment should not be installed at the initial phase of the construction. Those processes are relatively independent to the air stripping process and can be added on later if deemed necessary, as long as space and piping connections are reserved. In addition, the batch acid cleaning process is estimated to be performed less than twice a year (pages 2-11 and 2-6). Portable equipment, such as tanker trucks equipped with pumps, could be more cost effective.

The need for effluent piping acid addition can be evaluated by the "Langelier Index" of aerated groundwater.

General Units should be stated in mg/L, µg/L, psig, and scfm, instead of ppm, ppb, psi, and cfm, respectively.

Preliminary Extraction Well Plan

The use of MODFLOW for modeling existing conditions at Colbert Landfill appears to follow accepted practices. All of necessary components are clearly presented. In addition, it appears that thought was given to the formulation of the model(s) and that the limitations of the modeling effort were well examined. In some areas, more detailed discussions would be appropriate. Specific comments on technical issues are provided below:

- o For modeling considerations, the ranges used in the hydraulic conductivity sensitivity analyses appear to be restricted to the

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high and low observed field values. A larger interval may be more appropriate to account for unexpected highs or lows.

- o The east model boundary for the upper aquifer cuts through the eastern edge of the landfill. Little quantitative information is known about the eastern boundary and the supposition is that the upper and lower aquifers directly interface in this area as the lacustrine unit pinches out. Therefore, a more fully developed discussion of the modeling assumptions would be appropriate.
- o Did hardware and grid considerations necessitate two separate models for the upper and lower aquifers? A single, multi-aquifer model would seem more appropriate.
- o Relative to the use of VCONT in the upper aquifer simulation, the use of this variable implies a model with two or more layers. Yet the gridding and discussion clearly show two models, one for the upper aquifer and one for the lower aquifer, were developed. Vertical discretization is not discussed in either model and one would assume each model to be a single layer. Therefore, is the use of VCONT superfluous?

If you have any questions regarding these comments, please do not hesitate to call me at 624-9537.

Sincerely yours,

ECOLOGICAL AND ENVIRONMENT, INC.



Lyle Diediker
Project Manager

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